

ABSTRACT

An apparatus, method, and system are disclosed to analyze samples materials using triboluminescent technology. A mechanical activation knot is provided that comprises an optical window, a membrane, and a device that supplies a constant pressure of gas on the zone of activation. A sample is placed between the membrane and the optical window. The optical window is rotated along its z-axis. The friction between the sample and the optical window generates triboluminescence and associated optical emissions. Optical emissions may be distributed on the spectrum by a spectrograph, a monochromator, or a collection of filters, and then fixed by the charge coupled device, a photodiode, or a photomultiplier tube. Then, the results (data) are incorporated into different mathematical algorithms or programs with the help of computers or other computation technologies. The final results (the output) may be compared among themselves or with reference data stored in a computer's memory.